

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

HONG KONG UCLOUDLINK
NETWORK TECHNOLOGY LIMITED, et
al.,

Plaintiffs,

v.

SIMO HOLDINGS INC., et al.,

Defendants.

Case No. [18-cv-05031-EMC](#)

ORDER RE CLAIM CONSTRUCTION

Docket Nos. 93, 102, 105

Plaintiffs (collectively, “UCL”) have sued Defendants (collectively, “SIMO”) for patent infringement. The only patent at issue is UCL’s ‘780 patent. The Court held a *Markman* hearing on March 10, 2020. This order memorializes the Court’s claim construction on the disputed terms.

I. FACTUAL & PROCEDURAL BACKGROUND

The ‘780 patent is titled “Service sharing system and apparatus.” Context for the patent is provided in the section of the patent titled “Background of the Invention.”

At present, almost all the communication terminals, such as mobile phones, data cards, and hotspot devices, are capable of establishing connections with the corresponding service providers or networks using physical Subscriber Identity Module (SIM) cards inserted thereon. SIM is a unique authentication ID issued by a service provider for controlling access of a user equipment. The SIM enables the user equipment to enjoy data and voice services.

Typically, since the service provider is bound to the SIM in the device, one terminal may only use voice and data services provided by a service provider specified by the SIM. This brings many inconveniences to a subscriber. The subscriber cannot select services provided by an appropriate service provider according to

1 signal strength and location information. When the subscriber is
2 roaming, the subscriber may only select services provided by a
3 service provider signing a roaming service agreement with the
4 original service provider, and needs to pay service fees much more
5 than a local subscriber. In addition, the package balance of the
6 subscriber cannot be shared or exchanged to another subscriber[,]
7 but only wasted; and when the package broadband traffic is
8 insufficient, temporary services are very inconvenient for the
9 subscriber.

6 Due to restriction of the tariff and package of the service provider,
7 on-demand use of bandwidth cannot be practically implemented, but
8 the fees are paid based on traffic. It is difficult for the subscriber to
9 dynamically acquire desired services, for example, increased
10 bandwidth and short message services, according to actual
11 requirements.

9 '780 patent, col. 1, ll. 22-50.

10 The '780 patent is directed to the above problem.

11 According to the embodiments of the present invention, a subscriber
12 acquires appropriate subscriber identity information, for example,
13 SIM data, according to actual requirements, and implements sharing
14 of services corresponding to individual or group subscriber identity
15 information, thereby acquiring an international, any-network, any-
16 service provider, any-technology and mode, or any service (data,
17 voice, video, and the like) network access service.

15 '780 patent, col. 2, ll. 54-61.

16 A representative claim for the '780 patent is claim 1. Claim 1 states as follows (terms to
17 be construed are in bold):

18 1. A subscriber identity module (SIM)-based service sharing
19 system, comprising:

20 **at least one SIM card read-and-write device, configured to**
21 **simulate a read-and-write process performed by a local user**
22 **equipment of a SIM card providing service sharing to a**
23 **physical SIM card, wherein at least one SIM card providing**
24 **service is insertable in the at least one SIM card read-and-**
25 **write device;**

23 a SIM scheduling management system configured to select
24 appropriate SIM from the at least one SIM card inserted in the at
25 least one SIM card read-and-write device according to the
26 location of a user equipment and the type of a service requested
27 by a subscriber, and assign the appropriate SIM to the
28 subscriber; and

27 at least one multi-channel communication, configured to
28 communicate with the SIM scheduling management system to
acquire the appropriate SIM assigned by the SIM scheduling
management system, and communicate with a service provider

1 system corresponding to the appropriate SIM assigned by the
2 SIM scheduling management system to acquire the service
3 requested by the subscriber;

4 wherein the appropriate SIM is a smart card having **the SIM**
5 **function** or SIM data;

6 the SIM scheduling management system comprises:

7 **a SIM database configured to store SIM data on the at least**
8 **one SIM card of the at least one SIM card read-and-write**
9 **device;**

10 a subscriber access unit configured to receive a service request
11 from the multi-channel communication device, return the SIM
12 card parameter assigned to the subscriber to the multi-channel
13 communication device, receive an authentication data packet of
14 the SIM card parameter from the multi-channel communication
15 device, and return a corresponding authentication result to the
16 multi-channel communication device;

17 a SIM scheduling unit, configured to search, according to the
18 service request received by the subscriber access management
19 unit, in the SIM database data to select appropriate SIM, and
20 return a corresponding SIM card parameter to the subscriber
21 access management unit; and

22 a SIM card read-and-write management unit, configured to
23 transfer the authentication data packet of the SIM card parameter
24 received from the subscriber access management unit to the at
25 least one SIM card read-and-write device, and return an
26 authentication result calculated by the at least one SIM card
27 read-and-write device to the subscriber access management unit.

28 ‘780 patent, claim 1 (emphasis added).

19 II. DISCUSSION

20 A. Legal Standard

21 Claim construction is a question of law, although it may have factual underpinnings. *See*
22 *Icon Health & Fitness, Inc. v. Polar Electro Oy*, 656 Fed. App'x 1008, 1013 (Fed. Cir. 2016); *see*
23 *also Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1357
24 (Fed. Cir. 2016). It "serves to define the scope of the patented invention and the patentee's right to
25 exclude." *HTC Corp. v. Cellular Communs. Equip., LLC*, 877 F.3d 1361, 1367 (Fed. Cir. 2017);
26 *see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008)
27 (stating that "the purpose of claim construction is 'to determin[e] the meaning and scope of the
28 patent claims asserted to be infringed'").

Words of a claim are generally given their ordinary and customary meaning, which is the meaning a term would have to a person of ordinary skill in the art after reviewing the intrinsic record at the time of the invention. "In some cases, the ordinary meaning of claim language . . . may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." However, in many cases, the meaning of a claim term as understood by persons of skill in the art is not readily apparent.

Id. (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005)).

Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to "those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean." Those sources include "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art."

Phillips, 415 F.3d at 1314. Although extrinsic evidence "can shed useful light on the relevant art, . . . it is less significant than the intrinsic record in determining the legally operative meaning of claim language." *Id.* at 1317 (internal quotation marks omitted).

B. Terms at Issue

1. "wherein at least one SIM card providing service is insertable in the at least one SIM card read-and-write device" (claim 1)

UCL's Proposed Construction	SIMO's Proposed Construction	Court's Construction
wherein at least one SIM card read-and-write device is configured to receive at least one SIM card that provides service	wherein at least one SIM card that provides service is inserted in the at least one SIM card read-and-write device	wherein at least one SIM card providing service is capable of being inserted in the at least one SIM card read-and-write device

1 The dispute between the parties essentially concerns the term “insertable.” UCL argues
2 that “insertable” means capable of being inserted whereas SIMO argues that “insertable” must
3 mean actually inserted or the invention does not work, *i.e.*, is not operable. UCL has the better
4 argument.

5 First, as UCL points out, the specification for the ‘780 patent (intrinsic evidence) uses
6 language stating that the SIM card “may” be inserted:

- 7 • “One or a plurality of SIM cards providing services *may* be inserted in each of the
8 at least one SIM card read-and-write device.” ‘780 patent, col. 5, ll. 31-33
9 (emphasis added).
- 10 • “In an embodiment of the present invention, during specific implementation, the
11 management channel establishing unit 431 comprises at least one SIM card slot and
12 a SIM card read-and-write chip connected to the at least one SIM card slot, wherein
13 a SIM card of the subscriber *may* be inserted into the SIM card slot.” ‘780 patent,
14 col. 9, ll. 36-41 (emphasis added).

15 Second, the dictionary definition (extrinsic evidence) for “-able” (the adjective suffix) is
16 “capable of, fit for, or worthy of (being so acted upon or toward) – chiefly in adjectives derived
17 from verbs.” <https://www.merriam-webster.com/dictionary/-able> (last visited March 10, 2020).

18 In response, SIMO contends that “Plaintiffs’ proposed ordinary meaning of ‘insertable’ as
19 the ‘capacity of being inserted’ should be rejected because it makes inserting a SIM card optional
20 and renders the entire claimed invention inoperable.” Resp. Br. at 4; *see also AIA Eng’g Ltd. v.*
21 *Magotteaux Int’l S/A*, 657 F.3d 1264, 1278 (Fed. Cir. 2011) (“[A] construction that renders the
22 claimed invention inoperable should be viewed with extreme skepticism.”). SIMO also points to
23 language from the patent specification using the term “inserted” without qualifications:

- 24 • “The SIM scheduling management **41** selects appropriate SIM from SIM cards
25 *inserted* in the SIM card read-and-write device **42** according to the location of a
26 user equipment and the type of a serviced requested by a subscriber, and in
27 consideration of a network environment of the subscriber and subscriber attributes;
28 and assigns the selected SIM to the subscriber” ‘780 patent, col. 6, ll. 1-7

(emphasis added).

- “The SIM card read-and-write chip **421**, under control of a SIM card management unit **423**, implements read and write of a SIM card *inserted* in the SIM card slot **422**.” ‘780 patent, col. 7, ll. 38-40 (emphasis added).
- “[T]he subscriber is registered in the SIM scheduling management system as a user of the system, and one or a plurality of SIM cards are *inserted* sing the SIM card read-and-write device **42** (SIM box) used by the individual subscriber.” ‘780 patent, col. 10, ll. 58-62 (emphasis added).

But SIMO’s argument is not persuasive because it fails to take into account UCL’s concession that, *at some point in time*, a SIM card is inserted in order for the invention to work; UCL’s point is simply that claim 1 is an apparatus claim, one that essentially describes the *structure* of the claimed invention. *See* Reply at 4 (“[C]laim 1 does not require that a SIM card be inserted at all times . . . ; it merely requires the various system components to be ‘configured to’ perform the actions at the appropriate time.”). The claim is not confined to an operative state.

Moreover, UCL’s position is supported by the language in claim 1 itself:

1. A subscriber identity module (SIM)-based service sharing system comprising:

at least one SIM card read-and-write device, configured to simulate a read-and-write process performed by a local user equipment of a SIM card providing service sharing to a physical SIM card, wherein at least one SIM card providing service is *insertable* in the at least one SIM card read-and-write device;

a SIM scheduling management system configured to select appropriate SIM from the at least one SIM card *inserted* in the at least one SIM card read-and-write device according to the location of a user equipment and the type of a service requested by a subscriber, and assign the appropriate SIM to the subscriber

‘780 patent, claim 1 (emphasis added). The above language makes clear that a SIM card does have to be “inserted” in order for the invention to work; however, in the first element above, UCL could have, but did not, use the term “inserted” but rather “insertable.” “[W]hen an applicant uses different terms in a claim it is permissible to infer that he intended his choice of different terms to reflect a differentiation in the meaning of those terms.” *Innova/Pure Water, Inc. v. Safari Water*

Filtration Sys., 381 F.3d 1111, 1119 (Fed. Cir. 2004); *see also Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1373 (Fed. Cir. 2004) (stating that “the use of [different] terms [here, ‘surrender value protected investment credit’ and ‘stable value protected investment credit’] in close proximity in the same claim gives rise to an inference that a different meaning should be assigned to each” – although adding that the inference “is not conclusive”).

Accordingly, “insertable” does not mean actually inserted. That being said, the Court does not adopt the specific construction proposed by UCL. UCL suggests the following construction: “wherein at least one SIM card read-and-write device is configured to receive at least one SIM card that provides service.” But “insertable” is with reference to the SIM card whereas “configured to receive” is with reference to the SIM card read-and-write device. Therefore, the Court adopts following construction instead (which hews more closely to the claim language): “wherein at least one SIM card providing service is capable of being inserted in the at least one SIM card read-and-write device.”

2. “at least one SIM card read-and-write device, configured to simulate a read-and-write process performed by a local user equipment of a SIM card providing service sharing to a physical SIM card” (claim 1)

UCL’s Proposed Construction	SIMO’s Proposed Construction	Court’s Construction
no construction necessary; or [alternatively] at least one SIM card read-and-write device that is configured to simulate a read-and-write process to a physical SIM card as would be performed by a local user equipment of a	indefinite	not indefinite at least one SIM card read-and-write device that is configured to simulate a read-and-write process to a physical SIM card as would be performed by a local user equipment of a SIM card

SIM card providing service sharing		providing service sharing
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The above phrase in dispute comes from the first element of claim 1 of the '780 patent:

1. A subscriber identity module (SIM)-based service sharing system comprising:

at least one SIM card read-and-write device, configured to simulate a read-and-write process performed by a local user equipment of a SIM card providing service sharing to a physical SIM card, wherein at least one SIM card providing service is insertable in the at least one SIM card read-and-write device

'780 patent, claim 1 (emphasis added). SIMO contends that the above phrase is indefinite and therefore claim 1 should be deemed invalid.

SIMO has

the burden of establishing indefiniteness by clear and convincing evidence. *See TecSec v. Int'l Bus Machines Corp.*, 731 F.3d 1336, 1349 (Fed. Cir. 2013). Generally, "a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014); *see also Takeda Pharm. Co. v. Mylan Inc.*, No. 13-CV-04001-LHK, 2014 U.S. Dist. LEXIS 159527, at *13-14 (N.D. Cal. Nov. 11, 2014) (noting that, prior to *Nautilus*, "the Federal Circuit applied an 'insolubly ambiguous' standard to indefiniteness questions" but "the Supreme Court rejected the insolubly ambiguous standard and replaced it with a 'reasonable certainty' standard").

Whether a claim is indefinite or definite is a question of law. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1260 (Fed. Cir. 2014). But while "[i]ndefiniteness is . . . a legal determination arising out of the court's performance of its duty construing the claims," "[l]ike enablement, definiteness, too, is amenable to resolution by the jury where the issues are factual in nature." *BJ Servs. Co. v. Halliburton Energy Servs.*, 338 F.3d 1368, 1372 (Fed. Cir. 2003).

Intri-Plex Techs., Inc. v. NHK Int'l Corp., No. 17-cv-01097-EMC, 2018 U.S. Dist. LEXIS 16877, at *22-23 (N.D. Cal. Feb. 1, 2018).

In its papers, SIMO makes several arguments as to how different components of the phrase above are indefinite. Each of those arguments is addressed below.

a. What Provides the “service sharing”?

SIMO argues first that, with respect to the above phrase, it is not clear what exactly provides the “service sharing” – *e.g.*, is it a SIM card, the SIM card read-and-write device, or a local user equipment?

The Court rejects SIMO’s argument. Arguably, the above phrase could have benefited from the use of additional punctuation and is confusing if considered in isolation. However, when the specification of the patent is taken into consideration, the phrase is understandable. This is especially true give that “patents are ‘not addressed to lawyers, or even to the public generally,’ but rather to those skilled in the art.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 909 (2014).¹

The “Background of the Invention” provides important context.

At present, almost all the communication terminals, such as mobile phones, data cards, and hotspot devices, are capable of establishing connections with the corresponding service providers or networks using physical Subscriber Identity Module (SIM) cards inserted thereon. SIM is a unique authentication ID issued by a service provider for controlling access of a user equipment. The SIM enables the user equipment to enjoy data and voice services.

Typically, since the service provider is bound to the SIM in the device, one terminal may only use voice and data services provided by a service provider specified by the SIM. This brings many inconveniences to a subscriber. The subscriber cannot select services provided by an appropriate service provider according to

¹ In *Nautilus*,

[t]he parties differ[ed] . . . in their articulations of just how much imprecision §112, ¶ 2 tolerates. In [the alleged infringer] *Nautilus*’ view, a patent is invalid when a claim is ‘ambiguous, such that readers could reasonably interpret the claim’s scope differently.’ *Biosig* [the patent holder] and the Solicitor General would require only that the patent provide reasonable notice of the scope of the claimed invention.

Nautilus, 572 U.S. at 908. “Although the Supreme Court did not state its holding in these terms, its decision in *Nautilus* is closer to *Biosig*’s position than to *Nautilus*’ position” as “[t]he Court expressed primary concern with the public-notice function of a patent’s claims, and never accepted *Nautilus*’ position that a claim subject to more than one reasonable interpretation must be indefinite.” *In re Maxim Integrated Prods., Inc.*, No. 12-244, 2014 U.S. Dist. LEXIS 100448, at *35 n.2 (W.D. Pa. July 23, 2014). A contrary interpretation would suggest claim constructions could often be deemed indefinite. It is common for terms to be subject to more than one reasonable interpretation.

signal strength and location information. When the subscriber is roaming, the subscriber may only select services provided by a service provider signing a roaming service agreement with the original service provider, and needs to pay service fees much more than a local subscriber. In addition, the package balance of the subscriber cannot be shared or exchanged to another subscriber[, but only wasted; and when the package broadband traffic is insufficient, temporary services are very inconvenient for the subscriber.

Due to restriction of the tariff and package of the service provider, on-demand use of bandwidth cannot be practically implemented, but the fees are paid based on traffic. It is difficult for the subscriber to dynamically acquire desired services, for example, increased bandwidth and short message services, according to actual requirements.

‘780 patent, col. 1, ll. 22-50.

As indicated by the above, the prior art involved use of a SIM card on local user equipment to get data and voice services. The invention improves on that prior art as follows:

- “One or a plurality of SIM cards providing services may be inserted in each of the at least one SIM card read-and-write device **42**.” ‘780 patent, col. 5, ll. 31-33.
- “[T]he SIM card read-and-write device **42** may be subject to three types of different specifications and capacities in terms of hardware” – (1) “a SIM rack of a large group [which] supports read, write, and storage of several to tens of SIM cards,” (2) “a SIM array of a small group [which] supports read, write and storage of tens of SIM cards,” and (3) “a SIM box of an individual [which] supports read, write and storage of one or a plurality of SIM cards.” ‘780 patent, col. 5, ll. 34-53.
- “The SIM scheduling management **41** selects appropriate SIM from SIM cards inserted in the SIM card read-and-write device **42** according to the location of a user equipment and the type of service requested by a subscriber, and in consideration of a network environment of the subscriber and subscriber attributes; and assigns the selected SIM to the subscriber, thereby implementing an international, any-network (any-service provider), any technology and mode, any-service network access service for the subscriber, and implementing sharing of the services corresponding to individual or a group SIM.” ‘780 patent, col. 6, ll. 1-11.

Or as UCL’s expert, Dr. Feuerstein, testifies:

Because the SIM card read-and-write device may be, for example, a SIM rack, SIM array, or SIM box, the physical SIM card need not actually be located on the local user equipment. Thus, the SIM card read-and-write device “simulates” the read-and-write processes to a physical SIM card located, for example, in the SIM rack, SIM array, or SIM box, as would be performed by a local user equipment of a SIM card providing service sharing.

Docket No. 79-1 (Feuerstein Decl. ¶ 59).²

Thus, when SIMO asks what exactly provides the service sharing, the response is that “providing service sharing” – as used in the above phrase – modifies the noun “SIM card.” In other words, it is a SIM card that provides service sharing. This makes grammatical sense in that the noun closest to the modifier “providing service sharing” is “SIM card.” Thus, the above phrase could have been more clearly written as follows: “at least one SIM card read-and-write device, configured to simulate a read-and-write process (performed by a local user equipment of a SIM card providing service sharing) to a physical SIM card.”

That being said, the Court notes that, even though “providing service sharing” modifies “SIM card,” the SIM card is associated with “local user equipment” and, in that respect, the “local user equipment” also provides service sharing. Moreover, the “SIM card read-and-write device” emulates the read-and-write process performed by the “local user equipment” and thus is also designed to provide service sharing.

b. What is the Meaning of “service sharing”

As noted above, the disputed phrase is as follows (in bold):

at least one SIM card read-and-write device, configured to simulate a read-and-write process performed by a local user equipment of a SIM card providing service sharing to a physical SIM card, wherein at least one SIM card providing service is insertable in the at least one SIM card read-and-write device

‘780 patent, claim 1 (emphasis added). According to SIMO, there is an indefiniteness problem with the above phrase because it is not clear what “service sharing” means above. SIMO contends

² Dr. Feuerstein opines as to how one skilled in the art would understand the above phrase. SIMO has offered no expert testimony to the contrary, simply relying – as it acknowledged at the hearing – on linguistics alone. While SIMO was not required to offer any expert testimony, patents are not (as noted above) “‘addressed to lawyers, or even to the public generally,’ but rather to those skilled in the art.” *Nautilus*, 572 U.S. at 909.

that “service sharing” could be interpreted either as:

(1) a noun – *i.e.*, “providing service[-]sharing”; or

(2) a noun followed by a gerund – *i.e.*, “providing service[,] sharing to a physical SIM card.”

See Resp. Br. at 10. SIMO defends the latter interpretation on the basis that the patent specification at times refers to a SIM card providing service only – and not service sharing. *See, e.g.*, ‘780 patent, col. 5, ll. 31-33 (“One of a plurality of SIM cards providing services may be inserted in each of the at least one SIM card read-and-write device.”); ‘780 patent, col. 12, ll. 4-6 (“The SIM scheduling management system returns SIM providing services of the service provider 2 to the multi-channel communication device.”). SIMO notes that this is also consistent with claim 1 which refers (in the first element above) to the following: “wherein at least one SIM card providing service is insertable in the at least one SIM card read-and-write device.” ‘780 patent, claim 1.

SIMO’s interpretation is far fetched. Notably, nothing in the patent (including the specification) talks about “sharing to a physical SIM card,” which is what the SIMO’s interpretation requires. Furthermore, SIMO’s interpretation would be grammatically awkward – *i.e.*, “at least one SIM card read-and-write device, configured to simulate a read-and-write process performed by a local user equipment of a SIM card providing service[,] sharing to a physical SIM card.” Sharing *what* to a physical SIM card?

SIMO is correct that different words in the same claim are usually afforded different meanings (*i.e.*, “service[-]sharing” and “service”). But SIMO ignores the fact that “service[-]sharing” is a *kind* of service; furthermore, it is clear from the patent as a whole (including the specification) that the service to be provided by the invention is service sharing specifically. *See, e.g.*, ‘780 patent, col. 6, ll. 1-12 (“The SIM scheduling management 41 selects appropriate SIM from SIM cards inserted in the SIM card read-and-write device 42 according to the location of a user equipment and the type of service requested by a subscriber, and in consideration of a network environment of the subscriber and subscriber attributes; and assigns the selected SIM to the subscriber, thereby implementing an international, any-network (any-service provider), any-

technology and mode, implementing sharing of the services corresponding to individual or a group SIM.”).

SIMO protests that the prosecution history (intrinsic evidence) supports its position. But the argument is not well taken. For example, it is true that the claim as originally drafted (then-known as claim 12) did refer to “at least one SIM card read-and-write device, configured to simulate a read-and-write process performed by local user equipment of a SIM card providing service sharing a physical SIM card.” Docket No. 93-2, at 34 (prosecution history). That is, the claim as originally drafted referred to “a SIM card providing service sharing a physical SIM card,” and not “a SIM card providing service sharing ~~to~~ a physical SIM card” (as stated in current claim 1). However, the omission of “to” appears to have been an administrative-type of mistake that UCL corrected or at least an error addressed after the patent examiner determined that the claim was “subject to restriction and/or election requirement.” Docket No. 93-2, at 121.

SIMO points out that, during the prosecution of the patent, UCL also made another change to the claim then-known as claim 12:

at least one SIM card read-and-write device, configured to simulate a read-and-write process performed by a local user equipment of a SIM card providing service sharing to a physical SIM card, wherein at least one SIM card providing service ~~sharing are~~ is insertable in the at least one SIM card read-and-write device.

Docket No. 93-2, at 162-63 (prosecution history) (strike out and emphasis in original). But this is not a *clear* disavowal of claim scope. *See Poly-America, L.P. v. API Indus., Inc.*, 839 F.3d 1131, 1136 (Fed. Cir. 2016) (noting that a “disavowal need not be explicit” but it “must be clear and unequivocal”; “the standard for disavowal is exacting, requiring clear and unequivocal evidence that the claimed invention includes or does not include a particular feature” – notably, “[a]mbiguous language cannot support disavowal”). “Service” does not necessarily exclude service sharing which can be a kind of “service.”

Accordingly, the Court rejects SIMO’s contention that there is indefiniteness based on a lack of clarity about what “service sharing” means.

c. What is the Meaning of “simulate”?

SIMO next contends indefiniteness based on the use of the term “simulate”:

at least one SIM card read-and-write device, **configured to simulate a read-and-write process** performed by a local user equipment of a SIM card providing service sharing to a physical SIM card, wherein at least one SIM card providing service is insertable in the at least one SIM card read-and-write device

‘780 patent, claim 1 (emphasis added). According to SIMO, “simulate” must be given its plain and ordinary meaning as the term is not defined in the specification, and UCL is construing “simulate” to mean the “complete opposite.” Resp. Br. at 13. SIMO maintains that “something simulated is a representation of an action *but not the real action*,” and, “[b]ecause ‘simulate’ means to imitate *but not do the same thing as*, the claim language ‘simulate a read and write process’ is indefinite. It is not clear what kind of read-and-write process would be imitated, *but not actually performed*” Resp. Br. at 15 (emphasis added).

SIMO’s argument is not persuasive. There is no real dispute between the parties that “simulate” means something along the lines of “imitate.” See Resp. Br. at 15 (SIMO’s position) (stating that “‘simulate’ means to imitate”); Docket No. 79-1 (UCL’s position) (Feuerstein Decl. ¶ 60) (testifying that “a POSITA [person of ordinary skill in the art] at the time of the invention would understand to ‘simulate’ means to imitate or emulate the way in which another system or process works”). SIMO assumes, however, that something is not “imitated” when the same result is achieved. But the invention at issue has clearly been designed to achieve the same result as the prior art (*i.e.*, service sharing); it is simply the way of accomplishing the result that makes the invention different. This is consistent with the claim language, namely, that a “process” is being simulated or imitated, not the end result.

d. Interpreting “to” to mean “of”

SIMO’s next argument is not entirely clear but appears to be related to its argument in Part II.C.1, *supra*. Below is the phrase at issue from claim 1:

at least one SIM card read-and-write device, **configured to simulate a read-and-write process** performed by a local user equipment of a SIM card providing service sharing **to a physical SIM card**, wherein at least one SIM card providing service is insertable in the at least one SIM card read-and-write device

‘780 patent, claim 1 (emphasis added). According to SIMO, UCL takes the position that the SIM card read-and-write device is “configured to simulate a read-and-write process” “to a physical

SIM card” (*i.e.*, the language bolded above) – reading out entirely the nonbolded language in between. *See* Resp. Br. at 17 (arguing that UCL lacks support for moving ‘to a physical SIM card’ from the end of the phrase to directly after ‘configured to simulate a read-and-write process”). SIMO also argues that this interpretation cannot be accepted because the specification of the patent talks about reading and writing *of* a SIM card, not *to*. *See, e.g.*, ‘780 patent, col. 7, ll. 38-40 (“The SIM card read-and-write chip **421**, under control of a SIM card management unit **423**, implements read and write *of* a SIM card inserted in the SIM card slot **422**.”) (emphasis added); ‘780 patent, col. 6, ll. 17-19 (“In the embodiments of the present invention, the multi-channel communication device **43** may support read and write *of* one or a plurality of physical SIM cards”) (emphasis added).

As indicated above, *see* Part II.C.1, the Court agrees with UCL that the SIM card read-and-write device is configured to simulate a read-and-write process (performed by a local user equipment) to a physical SIM card. Furthermore, the excerpts above from the patent specification – referring to reading and writing of a SIM card – ultimately supports UCL’s interpretation that the nonbolded language between “configured to simulate a read-and-write process” and “to a physical SIM card” should effectively be put in a parenthetical (*i.e.*, so as to modify “read-and-write process”). Finally, the Court is not troubled by the fact that the claim uses “to” while the patent specification uses “of.” The claim uses the word “to” because it is talking about a “read-and-write *process*.” In contrast, the patent specification simply references reading and writing, and not a *process* specifically.

e. “to a physical SIM card”

Finally, SIMO argues that “to a physical SIM card” lacks any written description³: “[T]he specification lacks *any* support for read-and-write process being performed ‘to a physical SIM card.’ Plaintiffs completely ignore this point, and seek to resolve this discrepancy by redefining ‘to’ as ‘of.’” Resp. Br. at 18. This argument is simply a variant of the one directly above, and therefore is rejected. As indicated above, SIMO argues that the specification of the patent refers to

³ Clearly, this is not an indefiniteness argument.

reading and writing *of* a SIM card, not *to*. But the claim may use the term “to” because it is talking about a read-and-write *process*.

f. Summary

For the foregoing reasons, the Court does not find indefiniteness and adopts UCL’s construction, and not SIMO’s.

3. “a SIM database configured to store SIM data on the at least one SIM card of the at least one SIM card read-and-write device” (claim 1)

UCL’s Proposed Construction	SIMO’s Proposed Construction	Court’s Construction
a SIM database configured to store SIM data of the at least one SIM card stored in the at least one SIM card read-and-write device	a SIM database configured to store SIM data on the at least one SIM card of the at least one SIM card read-and-write device	a SIM database configured to store SIM data of the at least one SIM card stored in the at least one SIM card read-and-write device

The parties’ dispute concerning the above phrase is about the word “on.” SIMO argues that “on” must be interpreted to mean a physical location – *i.e.*, a SIM database is configured to store SIM data physically on the SIM card. UCL argues in response that “on” is a word that can mean “of” or “about” – *e.g.*, a book “on” minerals is a book “about” minerals. *See* Docket No. 79-1, at 21 (definition of “on” provided in Merriam Webster) (providing as the twelfth definition (out of twelve): “ABOUT, CONCERNING <a book ~ minerals>”).

The Court agrees with UCL that “on,” as used in the above phrase, does not implicate physical location. Most tellingly, the patent specification contains the following language: “The SIM database **411** stores SIM data *of* the SIM card inserted on the SIM card read-and-write device” ‘780 patent, col. 8, ll. 5-6. In addition, other parts of the patent specification indicate that SIM data would not be pinned to a physical location on the SIM card. *See, e.g.*, ‘780 patent, col. 8, ll. 13-17 (stating that “the SIM data *stored in the SIM database* **411** comprises various

communication modes in different regions and of different service providers”) (emphasis added).
 Finally, it would make little sense for “on” to mean a physical limitation when that would mean
 embodiments disclosed in the patent specification would be excluded from claim 1. *See* Resp. Br.
 at 22 (SIMO not disputing that its construction “would exclude the preferred embodiments”). As
 UCL points out, the Federal Circuit has stated that “[a] claim construction that excludes a
 preferred embodiment is ‘rarely, if ever, correct.’ A construction that excludes *all* disclosed
 embodiments . . . is especially disfavored.” *Kaneka Corp. v. Xiamen Kingdomway Grp. Co.*, 790
 F.3d 1298, 1304 (Fed. Cir. 2015) (emphasis in original). SIMO, in response, cites *Lucent*
Technologies, Inc. v. Gateway, Inc., 525 F.3d 1200 (Fed. Cir. 2008), where the Federal Circuit
 stated: “[W]here we conclude that the claim language is unambiguous, we have construed the
 claims to exclude all disclosed embodiments.” *Id.* at 1215-16. But, in the instant case, there is
 ambiguity, if only by virtue of the language in the patent specification using the word “of.” *See*
 ‘780 patent, col. 8, ll. 5-6 (“The SIM database **411** stores SIM data *of* the SIM card inserted on the
 SIM card read-and-write device”) (emphasis added).

SIMO protests still that it was the use of the word “on” – *i.e.*, the limitation it placed – that
 prompted the patent examiner to give approval to the invention over the prior art. *See* Resp. Br. at
 19 (arguing that, “in the notice of allowance, the examiner repeated and emphasized the ‘on’
 limitation in his reasons for allowing the patent over the prior art”). But contrary to what SIMO
 suggests, the notice of allowance does not specifically call out the word “on”. Moreover, nothing
 in the notice of allowance indicates an understanding of “on” to implicate physical location.

Accordingly, the Court adopts UCL’s proposed construction over SIMO’s.

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4. “SIM function”

UCL’s Proposed Construction	SIMO’s Proposed Construction	Court’s Construction
no construction necessary; or [alternatively] functions of a SIM	indefinite	not indefinite; the function of a SIM, <i>i.e.</i> , a means by which a service provider authenticates a subscriber, thus enabling the subscriber to use her user equipment to enjoy services provided by the service provider

Below is the broader context for the term “the SIM function”:

1. A subscriber identity module (SIM)-based service sharing system, comprising:

at least one SIM card read-and-write device, configured to simulate a read-and-write process performed by a local user equipment of a SIM card providing service sharing to a physical SIM card, wherein at least one SIM card providing service is insertable in the at least one SIM card read-and-write device;

a SIM scheduling management system configured to select appropriate SIM from the at least one SIM card inserted in the at least one SIM card read-and-write device according to the location of a user equipment and the type of a service requested by a subscriber, and assign the appropriate SIM to the subscriber; and

at least one multi-channel communication, configured to communicate with the SIM scheduling management system to acquire the appropriate SIM assigned by the SIM scheduling management system, and communicate with a service provider system corresponding to the appropriate SIM assigned by the SIM scheduling management system to acquire the service requested by the subscriber;

wherein the appropriate SIM is a smart card having **the SIM**

function or SIM data;

....

‘780 patent, claim 1 (emphasis added). According to SIMO, “the SIM function” is indefinite because it lacks an antecedent basis in claim 1 (*i.e.*, “a SIM function”), and nothing in the patent, including the specification, sets “the outer boundaries of ‘the SIM function.’” Resp. Br. at 24. In short, what SIMO means here is that there are many functions of a SIM and, without further clarity as to which function is implicated, there is an indefiniteness problem.

The lack of an antecedent basis for “the SIM function” is not dispositive. As the Federal Circuit has noted: “The Manual of Patent Examining Procedure (‘MPEP’) states: ‘the failure to provide explicit antecedent basis for terms does not always render a claim indefinite. If the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite.’” *Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359 (Fed. Cir. 2001).⁴ For example, in *In re Downing*, 754 F. App’x 988 (Fed. Cir. 2018), the Federal Circuit did not find the absence of an antecedent basis for “the end user” a problem because it was, in essence, obvious what was meant by the term:

In this case, the "business information relevant to the end user" limitation introduces the term "the end user" without an antecedent basis. However, claim 1 only references one "end user." While the specification discloses many different end users, claim 1's recitation of one end user could only refer to the end user using the product. Who else could the end user be?

Id. at 996.

⁴ In *Bose* itself, the Federal Circuit effectively found an antecedent basis for a term – “an ellipse having a major diameter” – by implication. See *Fisher-Price, Inc. v. Graco Children's Prods.*, 154 F. App’x 903, 909 (Fed. Cir. 2005) (“A claim is not invalid for indefiniteness if its antecedent basis is present by implication.”). It explained:

[M]athematically an inherent characteristic of an ellipse is a major diameter. The prior recitation of "an ellipse" therefore, provides the antecedent basis for "an ellipse having a major diameter." "Inherent components of elements recited have antecedent basis in the recitation of the components themselves." MPEP § 2173.05(e). The MPEP provides an analogous example: "the limitation 'the outer surface of said sphere' would not require an antecedent recitation that the sphere have an outer surface."

Bose, 274 F.3d at 1359.

1 The instant case is not quite like *Downing* in that claim 1 of the ‘780 patent does not, in
2 and of itself, make obvious what is meant by “the SIM function.” On the other hand, the patent
3 specification does shed light on what “the SIM function” means. There are at least two places in
4 the specification that talk about what function a SIM provides:

- 5 • “SIM is a unique authentication ID issued by a service provider for controlling
6 access of a user equipment. The SIM enables the user equipment to enjoy data and
7 voice services.” ‘780 patent, col. 1, ll. 26-29.
- 8 • “In the embodiments of the present invention, the subscriber identity information is
9 used for a service provider to authenticate a subscriber, wherein the subscriber
10 identity information comprises SIM data of a subscriber serviced by a mobile
11 service provider, [etc].” ‘780 patent, col. 3, ll. 55-59.

12 Admittedly, the patent specification does not *expressly* define “the SIM function” as a means by
13 which a service provider authenticates a subscriber, thus enabling the subscriber to use her user
14 equipment to get services provided by the service provider. However, implicitly, that is how the
15 functioning of a SIM is described. And because that is how the functioning of a SIM is described,
16 the fact that a SIM could provide other additional functions does not render the term indefinite in
17 this context. (In its papers, SIMO did not identify other such functions; however, it identified at
18 least one other function at the claim construction hearing.).

19 Accordingly, the Court rejects SIMO’s contention that “the SIM function” is indefinite.
20 That being said, the construction that UCL provides is also problematic – *e.g.*, referring to
21 “functions” (plural) rather than “function” (singular) and failing to provide any specificity on what
22 the function actually is. The Court adopts the following construction instead: “the function of a
23 SIM, *i.e.*, a means by which a service provider authenticates a subscriber, thus enabling the
24 subscriber to use her user equipment to enjoy services provided by the service provider.”


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Dated: March 19, 2020


EDWARD M. CHEN
United States District Judge